

**Semester 1 Review Packet**

**Evaluate expressions:** Substitute values for indicated variables. Follow Order of Operations (GEMDAS) and pay close attention to your signs.

1.  $60 + 2(6 - 2) =$  \_\_\_\_\_      2.  $1 + 6(19 - 4^2) + 1 =$  \_\_\_\_\_      3.  $\frac{1}{3} + \left(-\frac{4}{9}\right) =$  \_\_\_\_\_

4.  $-75.7 + 42.6 =$  \_\_\_\_\_      5.  $29 - (-58) =$  \_\_\_\_\_      6.  $-30(-11) =$  \_\_\_\_\_

7.  $35 \div (-5) =$  \_\_\_\_\_      8.  $|-10| =$  \_\_\_\_\_      9.  $3c + bc - 2a$  for  $a = 6$ ,  $b = 5$ , and  $c = 9$  \_\_\_\_\_

**Simplify:** Expressions are simplified when there are no parentheses and all like-terms have been combined.

10.  $2(9d + 5) =$  \_\_\_\_\_      11.  $5x + 2(3x + 2) =$  \_\_\_\_\_

**Translation:**

- Words used to describe addition: \_\_\_\_\_
- Words used to describe subtraction: \_\_\_\_\_
- Words used to describe multiplication: \_\_\_\_\_
- Words used to describe division: \_\_\_\_\_

Write an algebraic expression for the verbal expression or write a verbal expression for the algebraic expression.

12. the sum of 49 and a number  $y$  \_\_\_\_\_      13.  $6x^3 - 1$  \_\_\_\_\_

**Number Sets:** Match the numbers with the appropriate number sets (choices may be used more than once).

- |                    |                      |                   |                |         |
|--------------------|----------------------|-------------------|----------------|---------|
| 14. Rational _____ | 15. Irrational _____ | a. $-\frac{5}{6}$ | b. $\sqrt{36}$ | c. $-4$ |
| 16. Integer _____  | 17. Whole _____      | d. $\sqrt{3}$     | e. $\pi$       | f. $5$  |

**Properties:** Name the property used in each equation by *matching*. Then find the value of the variable  $n$ .

18.  $n + 9 = 9$  \_\_\_\_\_  $n =$  \_\_\_\_\_

19.  $49n = 0$  \_\_\_\_\_  $n =$  \_\_\_\_\_

20.  $5n = 1$  \_\_\_\_\_  $n =$  \_\_\_\_\_

21.  $5n = 5$  \_\_\_\_\_  $n =$  \_\_\_\_\_

22.  $n + 9 = 0$  \_\_\_\_\_  $n =$  \_\_\_\_\_

- A. Additive Identity
- B. Additive Inverse
- C. Multiplicative Identity
- D. Multiplicative Inverse
- E. Multiplicative Property of Zero

**Solving Equations:** Solve for the variable.

23.  $x - 8 = 2$  \_\_\_\_\_

24.  $|x + 11| = 42$  \_\_\_\_\_

25.  $\frac{3}{4} + n = \frac{7}{12}$  \_\_\_\_\_

26.  $\frac{n}{7} = 6$  \_\_\_\_\_

27.  $96 = 32x$  \_\_\_\_\_

28.  $\frac{3}{7}a = \frac{2}{9}$  \_\_\_\_\_

29.  $3x - 2 = 46$  \_\_\_\_\_

30.  $-14 + 5z = -z + 16$  \_\_\_\_\_

31.  $10 = -5(2c - 6)$  \_\_\_\_\_

32.  $\frac{a}{-7} - 7 = 5$  \_\_\_\_\_

33.  $15(-42x + 40) = 15(-8x + 244)$  \_\_\_\_\_

34. Solve for 'y'       $9xy - 10z = 4w$        $y =$  \_\_\_\_\_

Solve the following **proportions** (two equal ratios): Cross multiply,  $\frac{a}{b} = \frac{c}{d} \rightarrow ad = bc$

35.  $\frac{d}{30} = \frac{9}{10}$  \_\_\_\_\_

36.  $\frac{3}{6} = \frac{b}{24}$  \_\_\_\_\_

37.  $\frac{104}{b} = \frac{13}{10}$  \_\_\_\_\_

38. Mr. Wong is looking at the plans for his new house. According to the plan, 2.4 inches equals 12 feet. If the length of a wall is 16 feet, how long is the wall on the plan? (Hint: Use a proportion to relate actual to model dimensions)

39. Darren can paint 4 fence sections in 2.3 hours. How long will it take him to paint 64 sections?

**Percent Change:** Solve by using decimals or proportions. Remember,  $\% \text{ change} = \frac{\text{New} - \text{Original}}{\text{Original}} * 100\%$

40. Original: \$19.30    New: \$23.30

(Circle) Increase or Decrease

% Change (to nearest tenth) = \_\_\_\_\_

**Total Price:** Convert % to decimals. Remember, total price = cost + tax

41. groceries: \$87.23  
tax: 6.5%

42. radio: \$59.00  
discount: 20%

43. shirt: \$28.00  
discount: 10%  
tax: 6.5%

Total price = \_\_\_\_\_

Total price = \_\_\_\_\_

Total price = \_\_\_\_\_

**Linear Inequalities:** Pay attention to the signs and symbols. Only when  $\times / \div$  by a *negative* #, **flip** all signs and symbol!!!

44. Solve the following inequalities: a)  $-4f < 36$

b)  $4 + 11c < 2(0.5c - 4)$

45. Solve and graph the solution on a number line.

$$k - 4 < 7$$



Solve the compound inequalities. Graph the solution set.

46.  $u + 2 \geq 1$  and  $u - 6 < 3$



47.  $g - 3 > -1$  or  $10 - 2g > 4$



### The Coordinate Plane:

48. For the graph provided to the right, do the following:

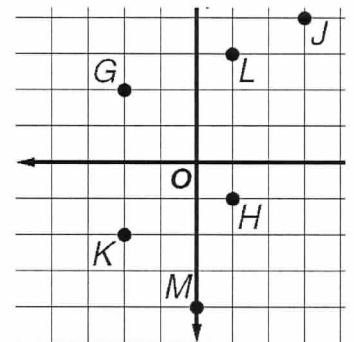
- Label the x-axis and y-axis, and the Origin (0, 0)
- Label the 4 Quadrants
- Identify the following points by their ordered pair and Quadrant (or axis):

L \_\_\_\_\_ Q: \_\_\_\_\_

M \_\_\_\_\_ Q: \_\_\_\_\_

G \_\_\_\_\_ Q: \_\_\_\_\_

K \_\_\_\_\_ Q: \_\_\_\_\_

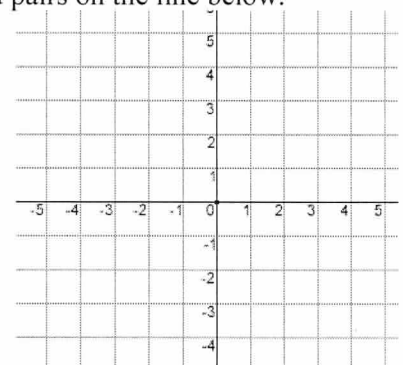


### Linear Functions:

49. (a) **Solve**  $y = 3x + 2$  for the given domain  $x = \{-2, -1, 0, 1\}$  and write the ordered pairs on the line below.

(b) **Graph** the solution set.

x	y
-2	
-1	
0	
1	



**Standard Form** for linear equations is  $Ax + By = C$  ( $x$  and  $y$  terms on same side,  $A$  is not negative, only integer coefficients (no decimals or fractions), and no GCF (number that can divide into all 3 terms evenly → reduce if possible).

50. Determine if the following equations are linear (*Yes* or *No*). If they are linear, put them in Standard Form.

a)  $2x = 4y$

b)  $6 + y = 8$

c)  $3xy + 8 = 4y$

d)  $3x = 12 - 4y$

e)  $y - 4x = 9$

### Linear Equations:

51. Find the **slope** ( $m$ ) of the line that passes through the following points.

a)  $(2, 3), (5, 7)$

b)  $(2, 8), (2, -8)$

c)  $(-3, y), (4, y)$

52. a) What type of line has the equation  $x = -7$ ? \_\_\_\_\_ What is its slope? \_\_\_\_\_

b) What type of line has the equation  $y = 2$ ? \_\_\_\_\_ What is its slope? \_\_\_\_\_

53. a) What is the formula for **slope-intercept form**? \_\_\_\_\_

b) Rewrite  $y = 2$  to put it in slope intercept form \_\_\_\_\_ (Refer to Problem #62 part b)

54. Explain why the equation of a vertical line **cannot** be in slope-intercept form? \_\_\_\_\_

---

55. Find the **slope** of the following lines:

a) Parallel to  $y = \frac{1}{5}x - 3$  \_\_\_\_\_

b) Perpendicular to  $y = \frac{1}{5}x - 3$  \_\_\_\_\_

Write an equation of the line in **slope-intercept form** that satisfies the given conditions: Remember to find/determine ***b***!!!

56. Slope:  $\frac{1}{4}$ , y-intercept: 0 \_\_\_\_\_

57. A horizontal line through  $(2, 7)$  \_\_\_\_\_

58. Passes through  $(-4, 1)$  \_\_\_\_\_  
and  $m = -3$

59. Passes through  $(4, 2), (-4, -3)$  \_\_\_\_\_

60. Convert the following equation into **slope-intercept form**:  $y - 5 = 2(x + 4)$  \_\_\_\_\_

61. Write the **point-slope form** of an equation that passes through  $(3, 1)$  \_\_\_\_\_  
and is parallel to  $y = -1x + 7$

**Graph** the following equations. **Plot at least 2 points** and make the line with a straight-edge.

62.  $y = 3x - 4$

63.  $y = -4$

64.  $x + 4y = 8$  (solve for  $y$  first!!)

$m =$  \_\_\_\_\_  $b =$  \_\_\_\_\_

$m =$  \_\_\_\_\_  $b =$  \_\_\_\_\_

$m =$  \_\_\_\_\_  $b =$  \_\_\_\_\_

